

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method, comprising:

receiving via a decoder input path a coordinate value associated with a Trellis decoder, the received coordinate value including an integer portion and a fractional portion;

evaluating a least significant bit of the integer portion; ~~and~~

calculating a difference between the received coordinate value and a pre-determined coordinate value based on the fractional portion and said evaluation;

determining a distance value associated with a distance between a received coordinate location and a pre-determined constellation point based at least in part on the difference;

performing a Trellis decoding process based at least in part on the distance value; and

outputting via a decoder output path a decoded result of the Trellis decoding process.

2. (original) The method of claim 1, wherein the received coordinate value comprises one of an X axis value and a Y axis value.

3. (original) The method of claim 1, wherein said evaluation comprises determining whether the least significant bit of the integer portion is a zero or a one.

4. (original) The method of claim 3, wherein the pre-determined coordinate value is an odd number and said calculating comprises, when the least significant bit of the integer portion is a zero:

setting the difference to one plus the fractional portion.

5. (original) The method of claim 3, wherein the pre-determined coordinate value is an odd number and said calculating comprises, when the least significant bit of the integer portion is a zero:

setting the difference to one minus the fractional portion.

6. (original) The method of claim 3, wherein the pre-determined coordinate value is an odd number and said calculating comprises, when the least significant bit of the integer portion is a one:

setting the difference to the fractional portion.

7. (original) The method of claim 3, wherein the pre-determined coordinate value is an odd number and said calculating comprises, when the least significant bit of the integer portion is a one:

setting the difference to two minus the fractional portion.

8-9. (canceled)

10. (currently amended) ~~A method~~ An apparatus, comprising:

an input path to receive ~~receiving~~ an X coordinate value associated with a Trellis decoder, wherein the received X coordinate value comprises an X integer portion and an X fractional portion; and

a decoder to:

set ~~setting~~ a first X difference between the received X coordinate value and a first pre-determined X coordinate value to one plus the X fractional portion when a least significant bit of the X integer portion is a zero;

set ~~setting~~ a second X difference between the received X coordinate value and a second pre-determined X coordinate value to one minus the X fractional portion when the least significant bit of the X integer portion is zero;

set ~~setting~~ the first X difference to the X fractional portion when the least significant bit of the X integer portion is one; and

set ~~setting~~ the second X difference to two minus the X fractional portion when the least significant bit of the X integer portion is one.

11. (currently amended) The ~~method~~ apparatus of claim 10, further ~~comprising:~~ wherein the input path is further to receive ~~receiving~~ a Y coordinate value associated with the Trellis decoder, wherein the received Y coordinate value comprises a Y integer portion and a Y fractional portion; and the decoder is further to:

set ~~setting~~ a first Y difference between the received Y coordinate value and a first pre-determined Y coordinate value to one plus the Y fractional portion when a least significant bit of the Y integer portion is a zero;

~~set~~ setting a second Y difference between the received Y coordinate value and a second pre-determined Y coordinate value to one minus the Y fractional portion when the least significant bit of the Y integer portion is zero;

~~set~~ setting the first Y difference to the Y fractional portion when the least significant bit of the Y integer portion is one; ~~and~~

~~set~~ setting the second Y difference to two minus the Y fractional portion when the least significant bit of the Y integer portion is one;

~~determine~~ determining a first distance based on the first X difference and the first Y difference;

~~determine~~ determining a second distance based on the second X difference and the second Y difference; and

~~perform~~ performing a Trellis decoding process based at least in part on the determined first and second distance values.

12. (previously presented) An apparatus, comprising:

an input path to receive a coordinate value associated with a Trellis decoder, the received coordinate value including an integer portion and a fractional portion; and

a multiplexer to receive (i) the fractional portion, (ii) the fractional portion plus one, and (iii) the least significant bit of the integer portion as a control signal.

13. (original) The apparatus of claim 12, further comprising:

a multiplexer to receive (i) one minus the fractional portion, (ii) two minus the fractional portion, and (iii) the least significant bit of the integer portion as a control signal.

14. (currently amended) A computer-readable storage medium having stored thereon instructions that when executed by a machine result in the following:

receiving via a decoder input path a coordinate value associated with a Trellis decoder, the received coordinate value including an integer portion and a fractional portion,

evaluating a least significant bit of the integer portion, ~~and~~

calculating a difference between the received coordinate value and a pre-determined coordinate value based on the fractional portion and said evaluation,

determining a distance value associated with a distance between a received coordinate location and a pre-determined constellation point based at least in part on the difference;

performing a Trellis decoding process based at least in part on the distance value;  
and

outputting via a decoder output path a decoded result of the Trellis decoding process.

15. (currently amended) The computer-readable storage medium ~~apparatus~~ of claim 14, wherein the received coordinate value comprises one of an X axis value and a Y axis value.

16. (currently amended) ~~A method~~ An apparatus, comprising:

an input line to receive ~~receiving~~ an X value and a Y value representing differences between a received location and a pre-determined constellation point associated with a Trellis decoder; and

a decoder to:

estimate ~~estimating~~ a distance between the received location and the pre-determined constellation point based on one of the X and Y values, wherein said estimating comprises:

estimating the distance as the X value multiplied by a pre-determined value when the X value is larger than the Y value, and

estimating the distance as the Y value multiplied by the pre-determined value when the Y value is larger than the X value.

17. (canceled).

18. (currently amended) The apparatus ~~method~~ of claim 16, wherein said estimating when the X value is larger than the Y value comprises:

left shifting the X value a pre-determined number of bits;

adding (i) the shifted X value to (ii) the X value multiplied by a pre-determined constant; and

right shifting the result of the addition a pre-determined number of bits.

19. (currently amended) The apparatus ~~method~~ of claim 16, wherein said estimating when the Y value is larger than the X value comprises:

left shifting the Y value a pre-determined number of bits;

adding (i) the shifted Y value to (ii) the Y value multiplied by a pre-determined constant; and

right shifting the result of the addition a pre-determined number of bits.

20. (previously presented) A modem, comprising:

an asynchronous digital subscriber line data pump, including:

an input path to receive a coordinate value associated with a Trellis decoder, the received coordinate value including an integer portion and a fractional portion, and

a multiplexer to receive (i) the fractional portion, (ii) the fractional portion plus one, and (iii) the least significant bit of the integer portion as a control signal; and

an Ethernet interface.

21. (original) The modem of claim 20, wherein the data pump further comprises:

a multiplexer to receive (i) one minus the fractional portion, (ii) two minus the fractional portion, and (iii) the least significant bit of the integer portion as a control signal.

22. (previously presented) A digital subscriber line access multiplexer, comprising:

a modem, including:

an input path to receive a coordinate value associated with a Trellis decoder, the received coordinate value including an integer portion and a fractional portion, and

a multiplexer to receive (i) the fractional portion, (ii) the fractional portion plus one, and (iii) the least significant bit of the integer portion as a control signal; and

an asynchronous transfer mode interface.

23. (original) The digital subscriber line access multiplexer of claim 22, wherein the modem further comprises:

a multiplexer to receive (i) one minus the fractional portion, (ii) two minus the fractional portion, and (iii) the least significant bit of the integer portion as a control signal.